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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/791,770
Applicant : KWEN, Jeung Ui
Filed : March 4, 2004
TC/A.U. : Not Yet Assigned
Examiner : Unknown
Docket No. : 1988.0003C
Customer No. : 27896
Title : Cushion Mat With Free Rotational Ball

MAIL STOP MISSING PARTS

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

PETITION AND RESPONSE

In response to the Notice of May 21, 2004, Applicant respectfully submits that there is no omission in the non-provisional application papers filed in the above-identified application on March 4, 2004. Upon review of a copy of the non-provisional application papers submitted on March 4, 2004, Applicant notes that minor misnumbering errors in the application specification resulted in the purported omission. A copy of the date stamped postcard receipt with serial number, a copy of the date stamped filing receipt, and a copy of the complete, as filed, application including transmittal documents, specification, claims, drawings, and abstract are attached at Appendix A.

There is no Figure 7b. Rather, the instant application includes Figures 5a, 5b, 6, and 7, which were misnumbered as Figures 7a, 7b, 5, and 6, respectively, in the non-provisional application papers, as filed. The misnumbering of the figures has been corrected in the

Preliminary Amendment submitted under separate cover herewith.

06/22/2004 BSAYASI1 00000055 10791770

01 FC:1460

130.00 0P

Applicant respectfully requests that the application be amended as presented in the Preliminary Amendment and that such amended application be accepted and be accorded the original filing date.

If the Examiner has any questions, the Examiner is requested to contact the undersigned at the number listed below.

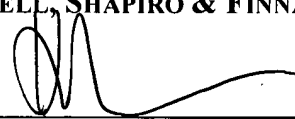
The Commissioner is hereby authorized to charge any additional appropriate fees under that may be required by this paper, and to credit any overpayment, to Deposit Account No. 05-0460.

Dated: June 18, 2004

EDELL, SHAPIRO & FINNAN, LLC
CUSTOMER NO. 27896
1901 Research Boulevard, Suite 400
Rockville, MD 20850
(301) 424-3640

Respectfully submitted by
EDELL, SHAPIRO & FINNAN, LLC

By:



Heather Morin
Reg. No. 37,336



The stamp of the U.S. Patent and Trademark Office placed hereon will indicate the date of receipt of the following:

Transmittal letter (4 Pages); New Patent Application including: Fourteen (14) Pages of Specification; Four (4) Pages of Claims; One (1) Page of Abstract; Eight (8) Sheets of Drawings; Declaration and Power of Attorney (3 pages); Check No. 7496 in the amount of \$85.00 in payment of the small entity filing fee; Assignment (2 pages); Assignment Recordation Cover Sheet; and Check No. 7497 in the amount of \$40 for payment of the Assignment recordation fee.

Applicant: Jeung Ui KWEN
For: Cushion Mat with Free Rotational Ball
Docket No.: 1988.0003C (PJF)
Filed: March 4, 2004

19270 U.S. PTO
10/791770





Attorney Docket No.: 1988.0003C

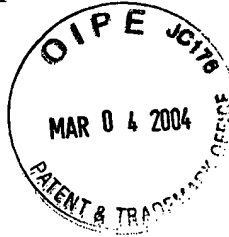
EDELL, SHAPIRO & FINNAN, LLC
1901 Research Boulevard, Suite 400
Rockville, Maryland 20850-3164
(301) 424-3640

In re the PATENT application of

Jeung Ui KWEN

Serial No.: Not Yet Assigned

Filed: Herewith



For: Cushion Mat With Free Rotational Bal

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COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The stamp of the U.S. Patent and Trademark Office placed hereon will indicate the date of receipt of the following:

Transmittal letter (4 Pages);

New Patent Application including:

Fourteen (14) Pages of Specification;

Four (4) Pages of Claims;

One (1) Page of Abstract;

Eight (8) Sheets of Drawings;

Declaration and Power of Attorney (3 pages);

Check No. 7496 in the amount of \$385.00 in payment of the small entity filing fee;

Assignment (2 pages);

Assignment Recordation Cover Sheet;

Check No. 7497 in the amount of \$40 for payment of the Assignment recordation fee; and

Postcard Receipt.

Hand-delivered: March 4, 2004



Attorney Docket No: 1988.0003C

PATENT

Box Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

UTILITY PATENT APPLICATION TRANSMITTAL

Transmitted herewith for filing is a U.S. Non-Provisional Utility Patent Application entitled: Cushion Mat With Free Rotational Ball

naming as inventors: Jeung Ui KWEN
111-1401 Lotte Apt.,
1263 Guro-dong
Guro-gu
Seoul, Korea

and including:

- ☒ Fourteen (14) pages of description (before the claims);
- ☒ Four (4) pages of claims ((12) total claims; (2) independent claims);
- ☒ One (1) Sheet of Abstract;
- ☒ Eight (8) sheets of drawings including Figures 1-7.

1. Also enclosed are:

- ☒ executed Declaration and Power of Attorney
- ☐ Application Data Sheet
- ☒ Assignment, Assignment Recordation Cover Sheet & Check No. 7497 in the amount of \$40 for payment of the assignment recordation fee.
- ☐ Power to Prosecute
- ☐ Information Disclosure Statement; PTO/SB08A;
- ☐ Preliminary Amendment
- ☐ CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix)
- ☐ Nucleotide and/or Amino Acid Sequence Submission
 - ☐ Computer Readable Form (CRF) on 3 1/2" floppy disk
 - ☐ Specification Sequence Listing on:
 - ☐ CD-ROM or CD-R (2 copies); or
 - ☐ paper
 - ☐ The content of the copy in computer readable form is identical to the content of the paper, CD-ROM, or CD-R copy of the Sequence Listing.
- ☐ Nonpublication Request and Certification

- ☒ Check No. 7496 in the amount of \$385.00 for the total small entity fee as calculated below
- ☒ Return receipt postcard
- ☐ Other:

2. ☐ Please amend the specification by inserting before the first heading the following paragraph:

This application claims priority under 35 U.S.C. §§119 and/or 365 to German Application No. _____ filed on _____, the entire contents of which are hereby incorporated by reference.

3. ☐ Please amend the specification by inserting before the first heading the following paragraph:

This application claims priority under 35 U.S.C. §119(e) to U.S. Provisional Application No. _____, filed _____, the entire content of which is hereby incorporated by reference.

4. ☐ Please amend the specification by inserting before the first heading the following paragraph:

This application claims priority under 35 U.S.C. §120 to U.S. Patent Application No. _____, filed _____, the entire content of which is hereby incorporated by reference.

5. ☐ A certified copy of the priority application ☐ is enclosed ☐ will follow.

6. The filing fee has been calculated as follows ☐ and in accordance with the enclosed preliminary amendment:

	NO. OF CLAIMS		EXTRA CLAIMS	RATE	FEE
Basic Application Fee					\$770.00
Total Claims	12	- 20 =	0	x \$18.00	00.00
Independent Claims	2	- 3 =	0	x \$86.00	00.00
If multiple dependent claims are presented, add \$290.00					
Total Application Fee					\$770.00
<input checked="" type="checkbox"/>	Applicant claims Small Entity Status (subtract 50% of Total Application Fee)				\$385.00
Other fees: (specify) Surcharge - Late filing of Declaration					
TOTAL FEE DUE					\$385.00

- ☐ This application is being filed without a filing fee. Issuance of a Notice to File Missing Parts of Application is respectfully requested.
- ☒ A check for the total fee is attached.
- ☐ Please charge \$_____ to Deposit Account No. 05-0460 for the total fee. This paper is being submitted in duplicate.
- ☒ The Commissioner is hereby authorized to charge any additional appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 05-0460.

7. Please direct all correspondence concerning this application to:

EDELL, SHAPIRO & FINNAN, LLC
1901 Research Boulevard, Suite 400
Rockville, MD 20850
(301) 424-3640

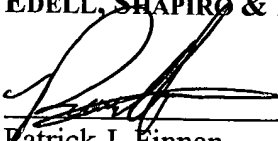
CUSTOMER NUMBER: 27896

Dated: 3/4/04

EDELL, SHAPIRO & FINNAN, LLC
CUSTOMER NO. 27896
1901 Research Boulevard, Suite 400
Rockville, MD 20850
(301) 424-3640

Respectfully submitted by
EDELL, SHAPIRO & FINNAN, LLC

By:



Patrick J. Finnegan
Reg. No. 39,189



Attorney Docket No:

PATENT

DECLARATION AND POWER TO PROSECUTE

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

CUSHION MAT WITH FREE ROTATIONAL BALL

the specification of which:

(check one)

[] is attached hereto;

[] was filed as United States Application Serial No. _____ on _____, and was amended on _____ (if applicable);

I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above;

I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information which is known to me to be material to the patentability of said invention in accordance with 37 C.F.R. §1.56;

I hereby claim foreign priority benefits under 35 U.S.C. §119 and/or §365 of any foreign application(s) for patent, any foreign application(s) for inventor's certificate, or any PCT international application(s) designating at least one country other than the United States of America listed below; I have also identified below any foreign application(s) for patent, any foreign application(s) for inventor's certificate, or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

Prior Foreign Application(s)

APPLICATION NUMBER	COUNTRY	DATE OF FILING (day, month, year)	PRIORITY NOT CLAIMED	CERTIFIED COPY ATTACHED?
			<input type="checkbox"/>	<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/>	<input type="checkbox"/> YES <input type="checkbox"/> NO

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below:

(Application Number)

(Filing Date) (day, month, year)

(Application Number)

(Filing Date) (day, month, year)

I hereby claim the benefit under 35 U.S.C. §120 and/or §365 of any United States application(s) or of any international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior application(s) in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. §1.56 which became available between the filing date(s) of the prior application(s) and the national or PCT international filing date of this application:

Prior U.S. Application(s) or PCT International Applications Designating the U.S. for benefit under 35 U.S.C. §120

U.S. APPLICATIONS			STATUS <i>(check one)</i>		
U.S. APPLICATION NO.	U.S. FILING DATE (day, month, year)		Pending	Patented	Abandoned
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCT APPLICATIONS DESIGNATING THE U.S.					
PCT APPLICATION NO.	PCT FILING DATE (day, month, year)	U.S. APPLICATION NOS. (if any)			
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

As a named inventor, I hereby appoint the registered practitioners of EDELL, SHAPIRO & FINNAN, LLC included in the Customer Number provided below to prosecute this application and to transact all business in the U.S. Patent and Trademark Office connected therewith; I further direct that correspondence concerning this application be directed to:

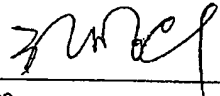
EDELL, SHAPIRO & FINNAN, LLC
1901 Research Boulevard, Suite 400
Rockville, MD 20850
Phone: (301) 424-3640
Fax: (301) 762-4056

CUSTOMER NUMBER: 27896

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole inventor: Jeung Ui KWEN

Inventor's signature



Date

Feb. 18, 2004

Residence: Seoul, Korea

Citizen of: Republic of Korea

Post Office Address: 111-1401 Lotte APT., 1263 Guro-dong, Guro-gu, Seoul, Korea

**ASSIGNMENT
(Sole)**

PATENT

Jeung UI KWEN, residing at 111-1401 Lotte APT., 1263 Guro-dong, Guro-gu, Seoul, Korea (referred to as "Assignor") has invented an invention(s) (the "Invention(s)") set forth in an application for patent of the United States, entitled CUSHION MAT WITH FREE ROTATIONAL BALL, and which is a:

- (1) ☐ provisional application
- (a) ☐ to be filed herewith; or
- (b) ☐ bearing Application No. , and filed on ; or
- (2) ☒ non-provisional application
- (a) ☒ to be filed herewith; or
- (b) ☐ bearing Application No. , and filed on

WHEREAS, WEGLO CO., LTD, a corporation duly organized under and pursuant to the laws of Republic of Korea, and having its principal place of business at 1218 Hanseo Bldg., 11-11 Yoido-dong, Youngdungpo-gu, Seoul, Korea (the "Assignee"), is desirous of acquiring the entire right, title, and interest in: the Invention(s); the application for patent identified in paragraph (1) or (2); the right to file applications for patent of the United States or other countries on the Invention(s); any application(s) for patent of the United States or other countries claiming priority to these application(s); any provisional or other right to recover damages, including royalties, for prior infringements of these applications; and any patent(s) of the United States or other countries that may be granted therefor or thereon.

NOW, THEREFORE, for good and sufficient consideration, the receipt of which is hereby acknowledged, and to the extent that the Assignor has not done so already via a prior agreement with the Assignee, or if the Assignor has already done so via a prior agreement with the Assignee then in confirmation of any obligation to do so in said prior agreement, the Assignor has sold, assigned, transferred, and set over, and by these presents does sell, assign, transfer, and set over, unto the Assignee, its successors, legal representatives, and assigns, the Assignor's entire right, title, and interest in:

- (a) the Invention(s); CUSHION MAT WITH FREE ROTATIONAL BALL.
- (b) the application for patent identified in paragraph (1) or (2);
- (c) the right to file applications for patent of the United States or other countries on the Invention(s), including all rights under the Hague Convention, the Paris Convention for the Protection of Industrial Property, and under the Patent Cooperation Treaty;
- (d) any application(s) for patent of the United States or other countries claiming the Invention(s);
- (e) any application(s) for patent of the United States or other countries claiming priority to the application for patent identified in paragraph (1) or (2) or any application(s) for patent claiming the Invention(s), including any division(s), continuation(s), and continuation(s)-in-part;

- (f) any provisional or other right to recover damages, including royalties, for prior infringements of any application for patent identified in the preceding paragraphs (b)-(e); and
- (g) any patent(s) of the United States or other countries that may be granted for or on any application for patent identified in the preceding paragraphs (b) - (e), including any reissue(s) and extension(s) of said patent(s).

The above-granted rights, titles, and interests are to be held and enjoyed by the Assignee, for its own use and behalf and the use and behalf of its successors, legal representatives, and assigns, as fully and entirely as the same would have been held and enjoyed by the Assignor had this sale and assignment not been made.

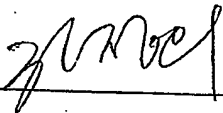
The Assignor hereby represents to the Assignee, its successors, legal representatives, and assigns, that, at the time of execution and delivery of these presents, or if applicable, at such time said prior agreement was executed, the Assignor is the sole and lawful owner of the entire right, title, and interest in and to the Invention(s), that the Invention(s) are unencumbered, except, if applicable, by obligation to assign in accordance with said prior agreement, and that the Assignor has good and full right and lawful authority to sell and convey the same in the manner set forth herein.

The Assignor hereby covenants and agrees to and with the Assignee, its successors, legal representatives, and assigns, that the Assignor will sign all papers and documents, take all lawful oaths, and do all acts necessary or required to be done in connection with any and all proceedings for the procurement, maintenance, enforcement and defense of the Invention(s), said applications, and said patents, including interference proceedings, without charge to the Assignee, its successors, legal representatives, and assigns, but at the cost and expense of the Assignee, its successors, legal representatives, and assigns.

The Assignor hereby authorizes and requests the attorneys of Edell, Shapiro & Finnan, LLC to insert in the spaces provided above the filing date, the application number, and the attorney docket number of the application identified in paragraph (1) or (2) when known.

The Assignor hereby requests the Commissioner of Patents to issue said patents of the United States to the Assignee for the sole use and behalf of the Assignee, its successors, legal representatives, and assigns.

Date: _____



By: Jeung Ui KWEN



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(Rev. 10/02)

OMB No. 0651-0027 (exp. 6/30/2005)

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RECORDATION FORM COVER SHEET

U.S. DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office

PATENTS ONLY

To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Jeung Ui KWEN

Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No

3. Nature of conveyance:



Assignment



Merger



Security Agreement



Change of Name



Other _____

Execution Date: 02/18/2004

2. Name and address of receiving party(ies)

Name: WEGLO CO., LTD

Internal Address: 1218 Hanseo Bldg., 11-11

Yoido-dong

Youngdungpo-gu, Seoul, Korea

Street Address: _____

City: _____ State: _____ Zip: _____

Additional name(s) & address(es) attached? ☐ Yes ☒ No

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is: 02/18/2004

A. Patent Application No.(s) _____

B. Patent No.(s) _____

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Patrick J. Finnan

Internal Address: Edell, Shapiro & Finnan, LLC

Street Address: 1901 Research Blvd.

Suite 400

City: Rockville State: MD Zip: 20850

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41).....\$ 40.00



Enclosed



Authorized to be charged to deposit account

8. Deposit account number:

05-0460

DO NOT USE THIS SPACE

9. Signature.

Patrick J. Finnan

Name of Person Signing


Signature

3/4/04

Date

Total number of pages including cover sheet, attachments, and documents: 3

Mail documents to be recorded with required cover sheet information to:

Commissioner of Patents & Trademarks, Box Assignments
Washington, D.C. 20231

CUSHION MAT WITH FREE ROTATIONAL BALL

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a cushion mat, and more particularly, to a cushion mat provided therein with a free rotation ball, which is made by uniting a plurality of rotation ball units constructed such that the free rotational ball is upwardly protruded.

Description of the Related Art

[0002] Generally, a long-time sitting seat, such as an office chair or a car seat, and a long-time sitting under-floor heating system use a cushion mat laid thereon.

[0003] As such, the cushion mat on which a person sits for a long time generally formed of a soft cushion or formed of a united bamboo and the like is mainly used.

[0004] However, the cushion mat using the soft cushion provides a soft comfort in case of a short-time sitting, but has a drawback in that in case of a long-time sitting, a ventilation

is not performed thereby being easily in sweat and a blood circulation of a leg portion is not normally performed.

[0005] Also, the cushion mat using the united bamboo and the like provides good ventilation thereby not being in sweat, but has a drawback in that a user cannot be easily in motion thereby overstraining a user's body when the user gets off a driver seat or needs a little motion.

[0006] On the other hand, the seat and the cushion mat not performing its own performance causes a modern person to suffer from various chronic diseases such as a blood mass or a thrombus due to an absolutely much time spent in a sitting life.

SUMMARY OF THE INVENTION

[0007] Accordingly, the present invention is directed to a cushion mat with a free rotational ball that substantially obviates one or more problems due to limitations and disadvantages of the related art.

[0008] An object of the present invention is to provide a cushion mat with a free rotation ball in which the free rotation ball is embedded to protrude upward such that a blood circulation of a human lower body can be helped and an effect of a finger

pressure therapy can be not only obtained, but also a user's motion can be secured.

[0009] Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objectives and other advantages of the invention may be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

[0010] To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, there is provided a cushion mat with a free rotational ball, the cushion mat including: a plurality of rotational ball units having a rotational ball for rotating whenever a person sitting on the cushion mat is in motion, and a housing for housing the rotational ball; and a connection string for passing through each of the plurality of rotational ball units in zigzags to unite and fix the plurality of rotational ball units.

[0011] It is characterized in that the rotational ball is formed of a material radiating a far infrared ray, and has a diameter of 10 - 30 mm.

[0012] Further, it is characterized in that the housing includes an upper housing having a circular through-hole formed at a center thereof to expose the rotational ball, and a lower housing for housing the rotational ball assembled to the upper housing within a certain space.

[0013] Furthermore, it is characterized in that the housing has a circular through-hole formed at an upper portion thereof to expose the rotational ball, and a ventilation through-hole formed at a lower portion thereof.

[0014] Additionally, it is characterized in that the housing has mutually contactable side surfaces rounded to form a gap space between the side surfaces so as to reduce a friction force when the plurality of rotational ball units is connected with one another.

[0015] Further, it is characterized in that the housing has a groove formed at a mutually contactable side surface so as to reduce a friction force when the plurality of rotational ball units is connected with one another.

[0016] In another aspect of the present invention, there is provided a cushion mat with a free rotational ball, the cushion mat including: a first wall body formed to have a rounded rectangular shape with a large height, a plurality of assembly recesses concaved at a lower side thereof, and a paired first connection through-hole and a paired second connection through-hole formed alternately and one by one on a mutual-adjacent side surface thereof; an upper housing comprised of a top portion being convexly extended from an upper side of the first wall body and having a circular rotational through-hole formed at a center thereof; a second wall body having a plurality of assembly protrusions protruded from an upper side thereof to be correspondingly combined to the assembly recesses; and a lower housing comprised of a bottom portion being perpendicularly extended from a lower side of the second wall body to close a lower portion and having a ventilation through-hole formed at a center thereof, wherein a plurality of rotational ball units is assembled including of the upper and lower housings and the rotational balls having the spherical-shapes, the rotational balls are housed within the upper and lower housings at the time of assembling the upper and lower housings to allow the rotational balls to rotate in a state in which its one portion is

exposed through the rotation through-hole, and the plurality of rotational ball units is united and fixed by a connection string passing through each of the first connection through-hole and the second connection through-hole in zigzags.

[0017] Further, it is characterized in that the rotational ball is formed of a material radiating a far infrared ray.

[0018] Furthermore, it is characterized in that the rotational ball has a diameter of 10 - 30 mm, and the first and second wall bodies have four rounded side surfaces.

[0019] Additionally, the first and second wall bodies have grooves formed at four side surfaces thereof.

[0020] It is to be understood that both the foregoing general description and the following detailed description of the present invention are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiment(s) of the invention and together with the

description serve to explain the principle of the invention. In the drawings:

[0022] FIG. 1 is a perspective view illustrating a disassembled rotational ball unit according to a preferred embodiment of the present invention;

[0023] FIG. 2 is a perspective view illustrating a bottom surface of an upper housing according to a preferred embodiment of the present invention;

[0024] FIGs. 3 and 4 are a perspective view and a perspective view with a part-cut portion illustrating an assembled rotational ball unit according to a preferred embodiment of the present invention;

[0025] FIG. 5 is a perspective view illustrating a cushion mat according to a preferred embodiment of the present invention;

[0026] FIG. 6 is a use state of a cushion mat according to a preferred embodiment of the present invention; and

[0027] FIGs. 7A and 7B are perspective views of assembled rotational ball units according to other embodiments of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0028] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

[0029] FIG. 1 is a perspective view illustrating a disassembled rotational ball unit according to a preferred embodiment of the present invention, FIG. 2 is a perspective view illustrating a bottom surface of an upper housing according to a preferred embodiment of the present invention, FIGS. 3 and 4 are a perspective view and a perspective view with a part-cut portion illustrating an assembled rotational ball unit according to a preferred embodiment of the present invention.

[0030] As shown in the drawings, the inventive cushion mat includes a plurality of rotational ball units 40 having rotational balls 30 for rotating whenever a person sitting on the cushion mat is in motion, and housings 10 and 20 for housing the rotational ball; and a connection string for passing through each of the rotational ball units in zigzags to unite and fix the rotational ball units.

[0031] Further, the housings are comprised of an upper housing 10 having a circular rotation through-hole 13 formed at a center thereof such that the rotational ball 30 can be exposed; and a lower housing 20 for housing the rotational ball 30 combined to the upper housing 10 within a predetermined space.

[0032] Furthermore, the upper housing 10 includes a wall body 11 formed to have a rounded rectangular shape and a large height, and a top portion 12 convexly extended from an upper side of the wall body 11.

[0033] Herein, the wall body 11 has assembly recesses 16 upwardly concaved at respective corners of four lower surfaces thereof, and has a paired first connection through-hole 14 and a paired second connection through-hole 15 formed alternately and one by one on a mutual-adjacent side surface thereof. The connection through-holes of the same kind are in parallel formed on opposing surfaces.

[0034] Additionally, the top portion 12 has a circular rotation through-hole 13 formed at a center thereof.

[0035] Meanwhile, it is desirable that the upper housing 10 has an inner surface that is straight-shaped excepting for a curved portion so as to minimize a contact surface with the rotational ball 30.

[0036] Further, the lower housing 20 is comprised of a wall body 21 and a bottom portion 22.

[0037] Herein, the wall body 21 can be formed to have a height much less than the wall body 11 of the upper housing 10, and has a plurality of assembly protrusions 24 protruded upwardly to be correspondingly combined to the assembly recesses 16.

[0038] Further, the bottom portion 22 is perpendicularly extended from a lower side of the wall body 21 to an internal side to close a lower portion of the lower housing 20, and has a ventilation through-hole 23 formed at a center thereof.

[0039] Furthermore, the assembly recesses 16 provided on respective corners of four lower surfaces of the upper housing 10 and the assembly protrusions 24 provided on respective corners of four lower surfaces of the lower housing 20 are combined with each other such that the rotational ball 30 is rotatably housed within the combined housings.

[0040] Additionally, the rotational ball 30 is spherical-shaped, and is housed within the housings 10 and 20 when the upper housing 10 and the lower housing 20 are assembled such that the rotational ball 30 is freely rotated in a state in which one portion of the rotational ball 30 is exposed to an external through the rotation through-hole 13.

[0041] At this time, the rotational ball 30 is freely rotated in a point-contact state of the wall body 11 and the bottom portion 22 that are straight-shaped to minimize a friction force.

[0042] Of course, it is desirable that even the top portion 12 does not have a surface contact with the rotational ball 30 to the maximum.

[0043] Further, it is desirable that the rotational ball 30 has a diameter of 10 to 30mm so as to maximize an effect of a finger pressure therapy.

[0044] FIG. 5 is a perspective view illustrating the cushion mat according to a preferred embodiment of the present invention, and FIG. 6 is a use state of the cushion mat according to a preferred embodiment of the present invention.

[0045] As shown in FIG. 5, the assembled rotational ball unit 40 is provided in numbers and is united by the connection string 50 to form the cushion mat 60.

[0046] At this time, it is desirable that the connection string 50 passes through each of the first connection through-hole 14 and the second connection through-hole 15 in zigzags.

[0047] In the cushion mat 60 according to the present invention, since the rotational ball 30 exposed to the upper side through the rotational through-hole 13 is freely rotated, the

rotational ball 30 rotates according to a user's motion while providing the finger pressure therapy to activate the blood circulation. Further, a direction conversion of a user's posture is easily accomplished within a narrow space such that a user's motion can be secured in flexibility.

[0048] Further, as shown in FIG. 6, if the cushion mat 60 is installed and used on a driver's seat of a car, a driver, especially a woman-driver wearing a skirt can slidingly get on and off the car. In addition, since the cushion mat 60 according to the present invention has a very good ventilation performance thereby preventing the driver from being in a sweat and always maintaining the driver to be in a good condition, various chronic diseases and the like that can be easily taken in a sitting life can be effectively prevented.

[0049] FIGs. 7A and 7B are perspective views of assembled rotational ball units according to other embodiments of the present invention.

[0050] As shown in FIGs. 7A and 7B, when the plurality of assembled rotational ball units are united by the connection string to form the cushion mat, the assembled rotational ball units can be constructed in various formats so as to minimize the friction between the plurality of assembled rotational ball units.

[0051] That is, as shown in FIGs. 7A, the rotational ball unit 70 according to another embodiment of the present invention includes a rotational ball 71 for rotating according to the motion of the user sitting on the cushion mat; and upper and lower hexahedral housings 72 and 73 for housing the rotational ball 71 therebetween. When the hexahedral housing is rounded at four side surfaces thereof such that when the rotational ball units are united to form the cushion mat, a gap space between the rotational ball units can be secured thereby minimizing the friction between the plurality of rotational ball units.

[0052] In the meanwhile, it is desirable that the rotational ball 30 is formed of a material radiating a far infrared ray such as jade, elvan and germanium. In this case, a human blood circulation is more promoted by radiation of the far infrared ray to thereby more effectively recover a fatigue and prevent a chronic disease.

[0053] The present invention described above can be not only used for the cushion mat, but also can be used for a bed mattress, a bottom plate for the finger pressure therapy or the like.

[0054] As described above, the present invention has an effect in that the free rotational ball is embedded to upwardly protrude such that the blood circulation of the human lower body

can be helped and the finger pressure therapy can be effected thereby reducing the fatigue and preventing the chronic diseases.

[0055] Further, the present invention has effects in that since the free rotational ball secures the user's motion, the user is not overstrained and the driver can easily and conveniently get on and off the car in case that the cushion mat is installed and used on the driver's seat.

[0056] It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention. Thus, it is intended that the present invention covers the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

What is claimed is:

1. A cushion mat with a free rotational ball, the cushion mat comprising:

5 a plurality of rotational ball units each having a rotational ball for rotating whenever a person sitting on the cushion mat is in motion, and a housing for housing the rotational ball; and

10 a connection string for passing through each of the plurality of rotational ball units in zigzags to unite and fix the plurality of rotational ball units.

2. The cushion mat according to claim 1, wherein the rotational ball is formed of a material radiating a far infrared
15 ray.

3. The cushion mat according to claim 1, wherein the rotational ball has a diameter of 10 - 30 mm.

20 4. The cushion mat according to claim 1, wherein the housing includes an upper housing having a circular through-hole formed at a center thereof to expose the rotational ball, and a lower housing for housing the rotational ball assembled to the upper housing within a certain space.

5. The cushion mat according to claim 1, wherein the housing has a circular through-hole formed at an upper portion thereof to expose the rotational ball, and a ventilation through-
5 hole formed at a lower portion thereof.

6. The cushion mat according to claim 1, wherein the housing has mutually contactable side surfaces rounded to form a gap space between the side surfaces so as to reduce a friction
10 force when the plurality of rotational ball units is connected with one another.

7. The cushion mat according to claim 1, wherein the housing has a groove formed at a mutually contactable side
15 surface so as to reduce a friction force when the plurality of rotational ball units is connected with one another.

8. A cushion mat with a free rotational ball, the cushion mat comprising:

20 a first wall body formed to have a rounded rectangular shape with a large height, a plurality of assembly recesses concaved at a lower side thereof, and a paired first connection through-hole and a paired second connection through-hole formed alternately and one by one on a mutual-adjacent side surface thereof;

an upper housing comprised of a top portion being convexly extended from an upper side of the first wall body and having a circular rotational through-hole formed at a center thereof;

5 a second wall body having a plurality of assembly protrusions protruded from an upper side thereof to be correspondingly combined to the assembly recesses; and

10 a lower housing comprised of a bottom portion being perpendicularly extended from a lower side of the second wall body to close a lower portion and having a ventilation through-hole formed at a center thereof,

wherein a plurality of rotational ball units is assembled including of the upper and lower housings and the rotational balls having the spherical-shapes, the rotational balls are housed within the upper and lower housings at the time of
15 assembling the upper and lower housings to allow the rotational balls to rotate in a state in which its one portion is exposed through the rotation through-hole, and the plurality of rotational ball units is united and fixed by a connection string passing through each of the first connection through-hole and the
20 second connection through-hole in zigzags.

9. The cushion mat according to claim 8, wherein the rotational ball is formed of a material radiating a far infrared ray.

10. The cushion mat according to claim 8, wherein the rotational ball has a diameter of 10 - 30mm.

5 11. The cushion mat according to claim 8, wherein the first and second wall bodies have four rounded side surfaces.

12. The cushion mat according to claim 8, wherein the first and second wall bodies have grooves formed at four side surfaces
10 thereof.

ABSTRACT OF THE DISCLOSURE

Disclosed is cushion mat with a free rotational ball, the cushion mat including: a plurality of rotational ball units having a rotational ball for rotating whenever a person sitting
5 on the cushion mat is in motion, and a housing for housing the rotational ball; and a connection string for passing through each of the plurality of rotational ball units in zigzags to unite and fix the plurality of rotational ball units.

Fig. 1

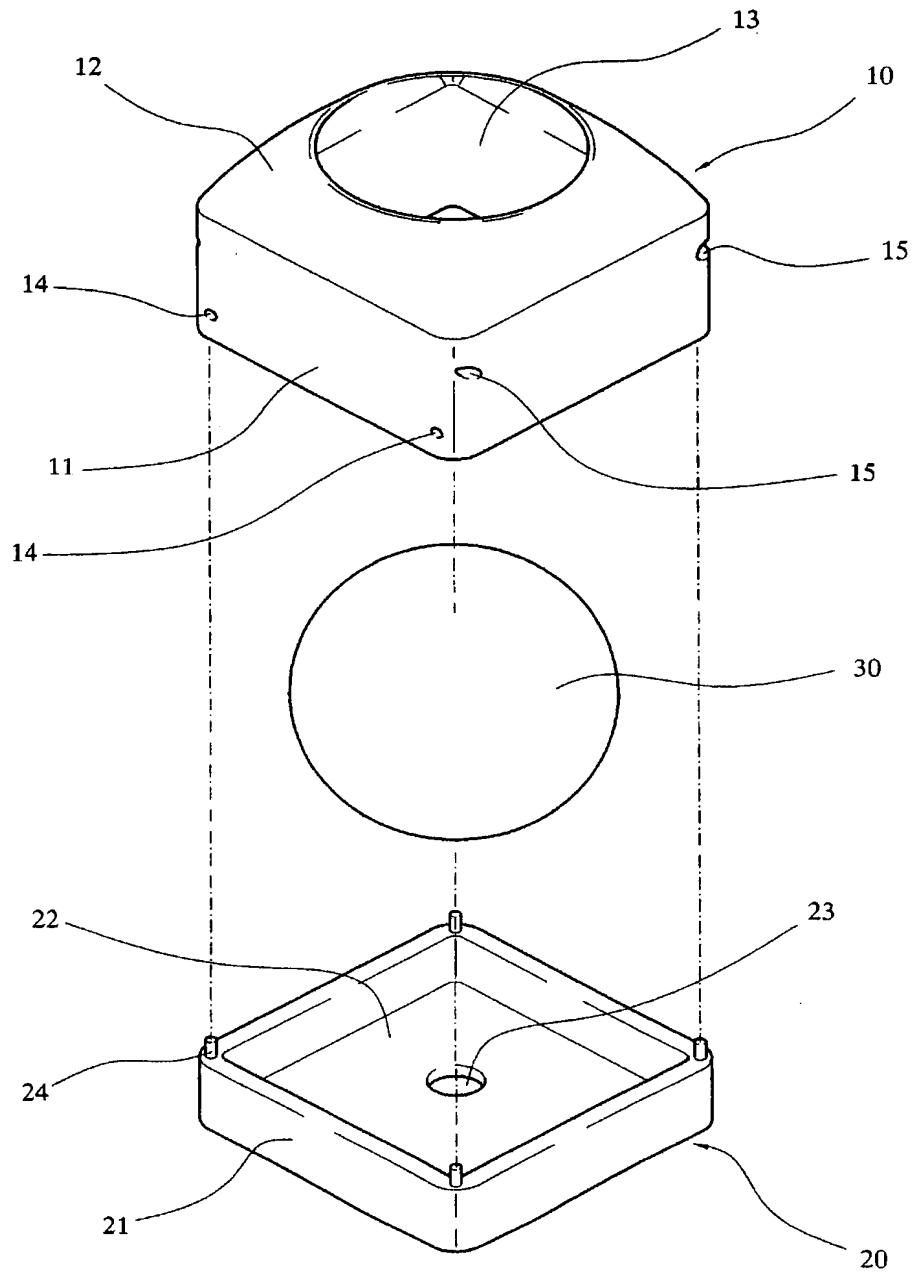
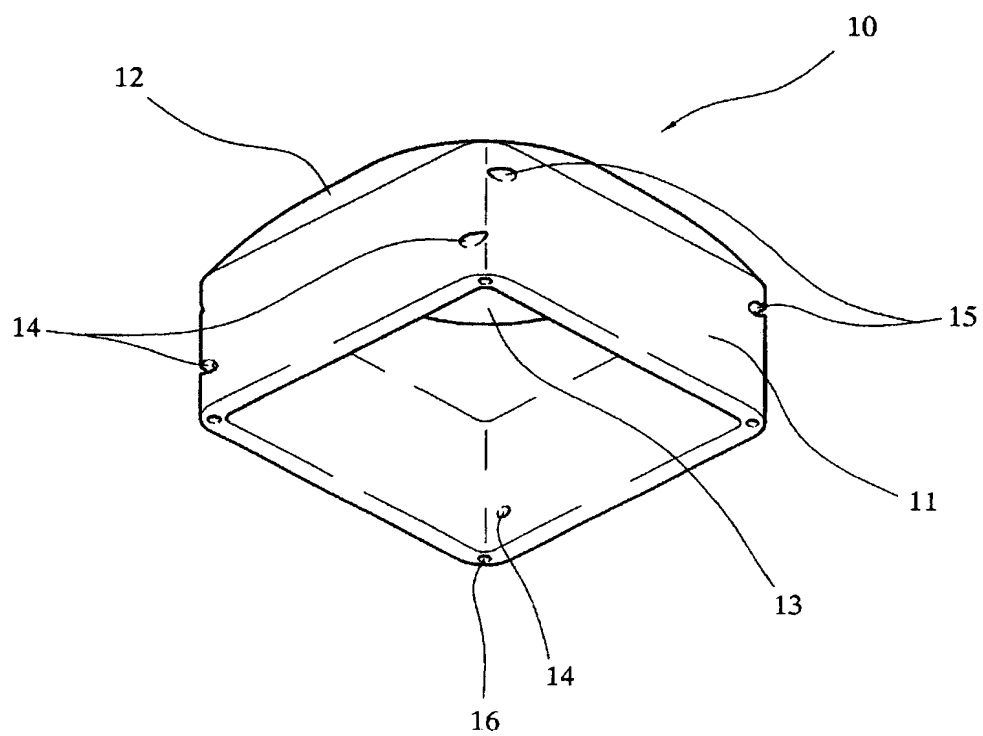


Fig.2



0



Fig. 4

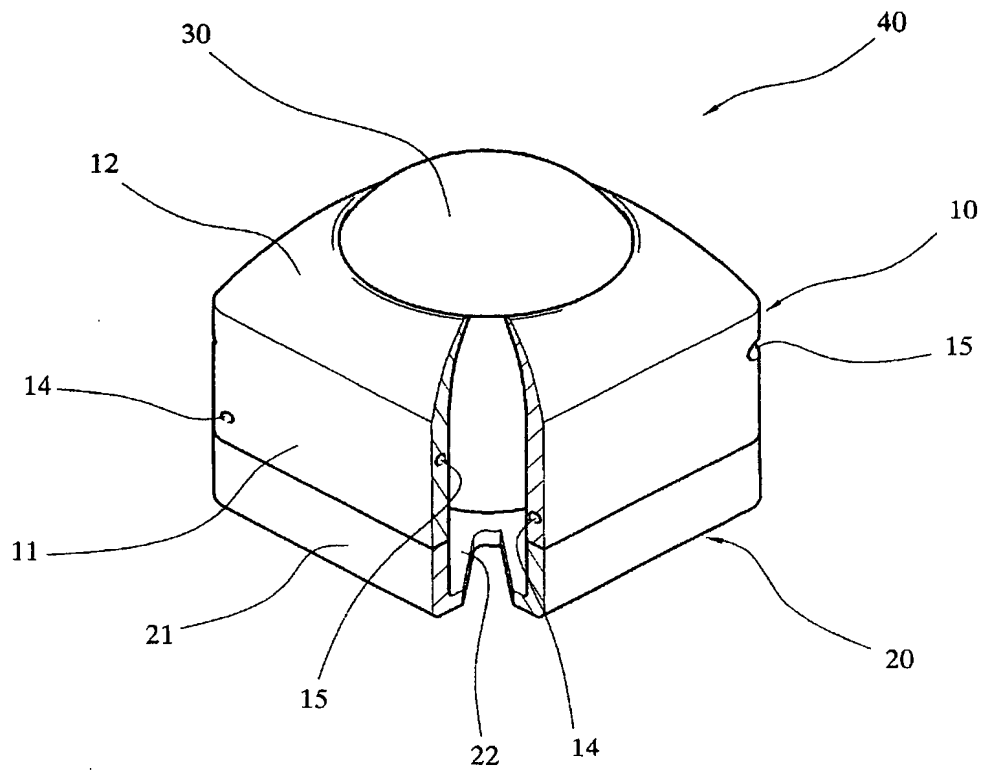


Fig.5a

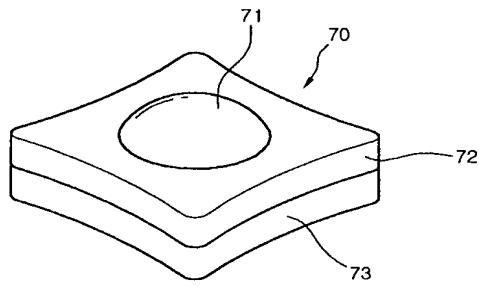


Fig. 5b

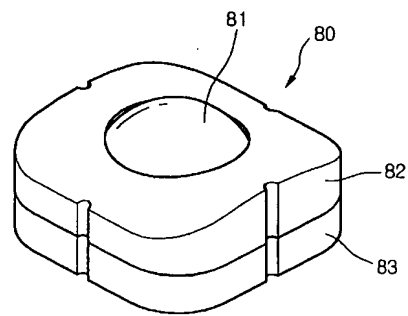


Fig. 6

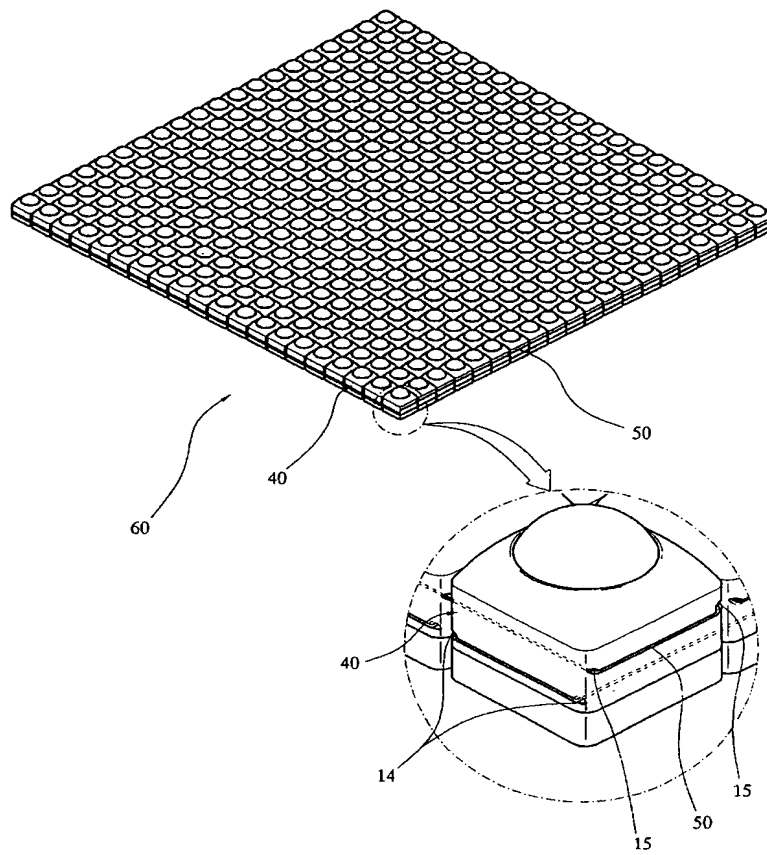


Fig. 7

